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EXAMINER

DANIELS, MATTHEW J

ART UNIT	PAPER NUMBER
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1791

MAIL DATE	DELIVERY MODE
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02/05/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/757,330

Applicant(s)

MERKLEY ET AL.

Examiner

MATTHEW J. DANIELS

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 18-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 18-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/24/07, 9/24/07, 10/30/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. **Claims 1, 5, 9-11 14, 16, 18-24, 30, 31, and 34** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 18 of U.S. Patent No. 6777103 in view of Schmidt (CA 1177205). **As to Claim 1**, The '103 patent provides the claimed steps of providing cellulose fibers (18:3), treating at least a portion of the cellulose fibers with a sizing agent (the chemical is interpreted to be a sizing agent, 18:4-5), mixing the sized fibers with a cementitious binder (18:9-11), forming (18:12-13), and curing (18:14-15). The '103 patent claims a chemical that inhibits microorganism growth into the fibers (18:5-6), but is silent to the limitation in the instant application claims that the treatment is performed in water or solvent to bond to the fibers and make the fibers hydrophobic. However, this aspect of

the invention would have been obvious over Schmidt, who teaches treatment of fibers in water or a solvent (page 2, lines 3-15 and elsewhere), which would bond with hydrophilic sites in the cellulose and make the surface hydrophobic (page 2, line 3). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Schmidt into the '103 patent because the '103 patent requires a chemical which would inhibit microorganism grown into the fibers, and by impregnating the fibers (Schmidt, page 1, line 2) with a metal aluminate and hydrophobizing chemical (page 1, lines 25-32), the process of Schmidt would inhibit growth of microorganisms into the fibers which require water for growth or survival. **As to Claim 5**, the process of the '103 patent is not claimed as performed under elevated pressure, and therefore when it was performed without pressurization, it would be performed at 1 atm. **As to Claim 9**, the process of the '103 patent is claimed to be performed at 1-6% consistency in a hydropulper (18:38-40). **As to Claims 10 and 11**, the '103 patent teaches the same or substantially the same CSF range (18:41-48). **As to Claim 14**, the '103 patent teaches the sized cellulose fibers mixed with unsized cellulose fibers (18:7). **As to Claim 16**, the '103 patent requires cement (18:10), an aggregate (18:51), density modifiers (18:57), and additives (18:54). **As to Claim 18**, the process of the '103 patent requires precuring and curing (19:2). **As to Claims 19-23**, the '103 patent provides identical or substantially identical claimed subject matter at 19:1-19). **As to Claim 24**, the '103 patent provides individualized fibers (18:3). **As to Claim 30**, the '103 patent provides a method of manufacturing a building material incorporating reinforcing fibers (18:1-15) comprising chemically treating at least a portion of the reinforcing fibers to improve the fiber's resistance to microorganism growth (18:5-6), which is a type of environmental degradation, wherein the fibers are individualized (18:3), mixing the

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reinforcing fibers with a hydraulic binder to form a mixture (18:9-11), forming (18:10-13), and curing (18:14). The '103 patent is silent to treatment in a solution. However, Schmidt teaches treatment of fibers in water or a solvent solution (page 2, lines 3-15 and elsewhere), which would bond with hydrophilic sites in the cellulose and make the surface hydrophobic (page 2, line 3). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Schmidt into the '103 patent because the '103 patent requires a chemical which would inhibit microorganism grown into the fibers, and by impregnating the fibers (Schmidt, page 1, line 2) with a metal aluminate and hydrophobizing chemical (page 1, lines 25-32), the process of Schmidt would inhibit growth of microorganisms into the fibers which require water for growth or survival. **As to Claim 31**, the fibers are individualized in the '103 patent (18:22). **As to Claim 34**, in the '103 patent in view of Schmidt teaches a reaction occurring (Schmidt, see the entire hydrophobizing process).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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2. **Claims 1-7, 10, 11, 15, 16, 18-27 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (WO 97/08111) in view of Schmidt (CA 1177205). **As to Claim 1**, Naji teaches a method of manufacturing a fiber reinforced cement composite material, comprising:

providing cellulose fibers (page 3, lines 7-16);

mixing the fibers with a cementitious binder and other ingredients to form a fiber cement mixture (page 3, line 25);

forming the fiber cement mixture into a fiber cement article of a pre-selected shape and size (page 3, line 30); and

curing the fiber cement article so as to form the fiber reinforced composite building material (page 4, lines 3-5).

Naji is silent to: treating at least a portion of the cellulose fibers with a sizing agent in the presence of water or an organic solvent, wherein the sizing agent comprises a hydrophilic functional group and a hydrophobic functional group, wherein the hydrophilic group chemically bonds to at least some of the hydrophilic sites on inner and outer surfaces of the fibers to form sized fibers, wherein the sizing agent substantially blocks the hydrophilic sites, thereby reducing the fibers' affinity toward water.

However, Schmidt teaches treating the cellulose fibers with a sizing agent of alkylsilanol (page 2, line 28), the alkylsilanol providing a hydrophobic surface (page 1, lines 21-24).

Because the treatment of Schmidt appears to bond with the cellulose and present a hydrophobic surface, it is submitted that it has the claimed hydrophobic and hydrophilic groups.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Schmidt into that of Naji because Naji suggests a

“water-proofing” agent (page 3, line 21) and that a reduction in water permeability and hygroscopic moisture movement is desirable (page 4, lines 15-17) and Schmidt provides a treatment which is considered to be a water proofing treatment and would lead to a reduction in water permeability and hygroscopic movement. **As to Claim 2**, Schmidt treats the fibers in a solution containing sizing agents (page 4, line 28). **As to Claim 3**, Schmidt teaches that the concentration of the sizing agent may be varied (page 3, lines 20-30) to produce “maximum effect” (page 1, lines 21-24), the effect being that of hydrophobizing. Thus, the amount of sizing agent represents a result-effective variable that would be adjusted, the concentration being preferably “low” (page 1, line 23), which is suggestive of concentrations less than 50%. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of sizing and arrive at the claimed conditions in order to maximize the hydrophobizing effect. **As to Claims 4 and 5**, it is submitted that in view of the teachings in Example 6 of Schmidt (pages 6-7) and the table therein, that a reaction time of about ½ to 1 hour at 1 atmosphere (normal atmosphere) would have been obvious. **As to Claim 6**, Schmidt teaches that the cellulose material is “immersed” (page 2, line 4), which would suggest that the amount of fibers is less than that of the solution, suggesting the claimed range. **As to Claim 7**, Schmidt teaches that as an alternative to immersion, the sizing may be sprayed onto the cellulose (page 2, lines 3-10). **As to Claims 10 and 11**, Naji suggests that the fibers should be fibrillated to 200-500 CSF (page 3, lines 15-16). **As to Claim 15**, Naji suggests a mixture of cellulose with inorganic and synthetic fibers (pages 3, lines 7-12). **As to Claim 16**, Naji teaches cementitious binder, density modifiers and additives (page 3, lines 7-25), and any of the components listed on pages 2-3 may be interpreted to be an aggregate, such as the pigments, colorants, or fillers.

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Schmidt provides the sized fibers. **As to Claims 18-23**, Naji teaches precuring and curing (page 4, lines 3-4), the precuring occurring for less than 80 hours without heating (page 4, lines 3-4), the curing performed in an autoclave in a pressurized vessel for 3 to 30 hours at a temperature of 120 to 200 C (page 4, lines 4-6). **As to Claim 24**, it is submitted that because the fibers have the claimed CSF value (compare Naji, page 3, lines 15-16 and instant Claims 10 and 11), they are implicitly individualized. **As to Claims 25-27**, these limitations are drawn to a particular order or difference in the order of process steps disclosed in the prior art, which is generally unpatentable in the absence of unexpected results because selection of any order of mixing ingredients is prima facie obvious. *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930). Here the case is sufficiently similar to *Gibson* because that case is also directed to a difference in the order of mixing ingredients (such as linseed oil, which may be considered a sizing agent) with fibers, which was found to be unpatentable. Additionally, in this case Schmidt teaches that the hydrophobizing treatment operates equally well when applied to cellulosic fibers (which are therefore individualized) or wood (page 2, lines 20-27), thus suggesting that an unexpected result is not to be found. **As to Claim 29**, Schmidt teaches that the fibers are treated in a sizing agent solution (page 1, lines 21-30) and dried (page 2, line 5). Because Naji teaches fibers having a particular CSF value, it would have been obvious to size the fibers, dry, and then incorporate the fibers into the mixture of Naji.

3. **Claims 8-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (WO 97/08111) in view of Schmidt (CA 1177205), and further in view of McReynolds (USPN 4225383). Naji and Schmidt teach the subject matter of Claim 1 above under 35 USC 103(a).

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As to Claims 8 and 9, Naji is silent to the claimed limitations, although it is noted that Naji requires a particular CSF value (page 3, lines 15-16). McReynolds teaches a 4% consistency of fiber in a hydropulper (21:43-45), which is interpreted to be a dispersing and fibrillating process. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of McReynolds into that of Naji because Naji suggests a CSF encompassing a value of 500, and McReynolds teaches hydropulping at 4% consistency is useful for achieving a CSF of 500 (21:43-50).

4. **Claims 12 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (WO 97/08111) in view of Schmidt (CA 1177205), and further in view of Battista (USPN 3400181) and Holbek (WO 84/04765, of record). Naji and Schmidt teach the subject matter of Claim 1 above under 35 USC 103(a). **As to Claims 12 and 13**, Naji is silent to the claimed limitations. However, Schmidt teaches drying of sized cellulose fibers (page 2, line 5). However, Schmidt is also silent to the claimed method to the claimed moisture content. However, Battista teaches that it is known to mix water and/or alcohol (4:18-23) with cellulose (3:35) and to subsequently spray dry or freeze dry the mixture (3:10-20), which is interpreted to be flash drying. Although silent to a particular resulting moisture level, Holbek teaches that cellulose fiber has an equilibrium water content of 7% (page 1, lines 30-32). Thus, Schmidt teaches that it is desirable to dry hydrophobized fibers after treating them in an aqueous or aqueous/alcoholic solution (page 1, line 27), Battista provides a rapid and efficient process for drying cellulose fibers in water and/or alcohol, and Holbeck teaches that the equilibrium moisture content of cellulose is 7% (and within the claimed range of 5%-50%). It would have

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been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the methods of Battista and Holbek into that of Naji and Schmidt because dry fibers would have better dispersibility in cement and because Schmidt suggests drying, and because the drying process of Battista would provide an efficient drying process for large quantities of cellulose fibers, and because drying to the equilibrium moisture content (and no lower) would save money by avoiding unnecessary heating.

5. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (WO 97/08111) in view of Schmidt (CA 1177205), and further in view of Randall (USPN 1914163). Naji and Schmidt teach the subject matter of Claim 1 above under 35 USC 103(a). **As to Claim 14**, Naji is silent to a mixture of sized and unsized fibers. However, Randall teaches mixing sized fibers with unsized fibers (page 2, right col, lines 109-115). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Randall into that of Naji in order to aid in dispersing the sizing material, reduce the quantity of sizing material used, or because cellulose fibers with a low water absorption (such as the hardwood fibers of Naji, page 3, line 9) would not require sizing.

6. **Claim 28** is rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (WO 97/08111) in view of Schmidt (CA 1177205), and further in view of Hoskins (WO 99/35330). Naji and Schmidt teach the subject matter of Claim 1 above under 35 USC 103(a). **As to Claim 28**, Naji is silent to the hammermilling, but clearly teaches cellulose fibers (See the rejection of Claim 1) which would have been comminuted in some manner. However, Hoskins teaches that

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comminution of pulp is conventionally accomplished using many processes "well known to those skilled in the art" (page 14, line 19), including including, in particular, hammermilling (page 14, line 20). Other methods recited on page 19 may be considered to be shredding process. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Hoskins into that of Naji because Naji suggests cellulose "fibers" which must have been comminuted, and Hoskins teaches that hammermilling is a desirable and well known comminution process.

Response to Arguments

7. Applicant's arguments filed 8 September 2007 have been fully considered but they are not persuasive. The arguments appear to be on the following grounds:
- a) "it is not clear that the '103 patent claims a sizing agent that 'comprises a hydrophilic functional group and a hydrophobic functional group,' nor that the hydrophilic group 'chemically bonds to at least some of the hydrophobic sites on inner and outer surfaces of the fibers.'" Furthermore, "it is not at all clear" that Schmidt teaches a chemical treatment to bond to hydrophilic sites of the cellulose fibers.
 - b) The insoluble substances of the '246 Patent occupy the pore spaces within the voids of the fibers, and "it is not clear" that the '246 Patent discloses the hydrophilic functional group and a hydrophilic functional group.
 - c) Regarding the 103 rejections, by teaching that a mixture of alkylsilanol is provided to create an impregnating hydrophobizing medium, Schmidt teaches away from the claimed invention.
 - d) The Office confuses the alkylsilanol as having a hydrophobizing effect.

8. These arguments are not persuasive for the following reasons:

- a) The Examiner's position will be that creating a hydrophobic surface would be an obvious method for inhibiting microorganism growth on the surface of cellulose fibers. Schmidt provides a known method of achieving this objective. Note that Schmidt teaches, for example, an alkylsilanol at page 4, lines 2 and 6, which appears to be the same or substantially the same as the sizing agent used in this application.
- b) Obvious-type double patenting rejections over the '246 Patent have been withdrawn.
- c,d) It is unclear why Schmidt's teaching of a mixture, even if true, would "teach away" from the claimed invention.

The instant application, published at US 2004/0145078, discloses at Par. [0091] that the sizing agent molecule has a hydrophilic functional group comprising silanol and a hydrophobic functional group comprising alkyl. Schmidt teaches, for example, an alkylsilanol at page 4, lines 2 and 6. Applicants appear to argue merely that the burden has not shifted to Applicants because it is not clear that Schmidt provides the claimed groups. However, it is submitted that by providing a treatment agent having the same or substantially the same functional groups disclosed by this application, the prior art establishes a prima facie case of unpatentability with respect to the limitation at issue.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. DANIELS whose telephone number is (571)272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

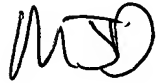
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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MJD 2/4/08



CHRISTINA JOHNSON
SUPERVISORY PATENT EXAMINER